



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO | CONFIRMATION NO |
|----------------|-------------|----------------------|--------------------|-----------------|
| 09 893,023 | 06 27 2001 | Frank O'Mahony | 884.405US1 | 3406 |

7590 07 16 2003

Schwegman, Lundberg, Woessner & Kluth, P.A.
P.O. Box 2938
Minneapolis, MN 55402

EXAMINER

SEFER, AHMED N

ART UNIT PAPER NUMBER

2826

DATE MAILED: 07 16 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,023

Applicant(s)

O'MAHONY ET AL.

Examiner

A. Sefer

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-18 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27-45 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2826

DETAILED ACTION

Response to Amendment

1. The amendment filed on 5/2/03 has been entered and new claims 26-45 have been added.

Response to Arguments

2. Applicant's arguments filed 5/2/03 have been fully considered but they are not persuasive. Applicants argue that Okamura (USPN 5,521,541) in view of Chi (USPN 5,387,885) and Sano et al. (JP 2-158165) fail to teach the device structure as recited in the claims.

Specifically, Applicants claim that any one of the references of record alone or in combination do not teach or suggest a signal wiring pattern having sufficiently low losses to make on-die salphasic clocking feasible.

3. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a signal wiring pattern having sufficiently low losses) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2826

5. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura US Patent No. 5,521,541 in view of Chi US Patent No. 5,387,885 and Sano et al. (JP 2-158165).

Okamura discloses figs. 2-6 a microelectronic die comprising a clock signal source 102 to provide a clock signal; and a clock signal distribution network to distribute said clock signal to multiple clocked elements 106 within said microelectronic die, said clock signal distribution network including at least on-die interconnect section, but discloses neither the use of salphasic clocking techniques to distribute said clock signal nor an interconnect comprising first and second differential signal lines.

Chi discloses (see abstract) salphasic clocking techniques to distribute clock signals.

Sano et al disclose in figs. 4 and 5 an interconnect comprising first and second differential signal lines 221, 222 to carry a differential version of a clock signal, said first and second differential signal lines being substantially parallel to one another.

Therefore, it would have being obvious to one skilled in the art at the time the invention was made to use a salphasic clocking techniques, since that would minimize phase shifts. It would have been obvious to employ an interconnect comprising first and second differential signal lines, since that would suppress a crosstalk between channels.

Regarding claim 14, Sano et al disclose at least a trace 210 on a metal layer being capacitively coupled to and non-parallel or substantially orthogonal (as in claim 15) with said first and second differential signal lines.

Regarding claim 16, Chi discloses a sinusoidal clock signal.

Art Unit: 2826

6. Claims 17, 18 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura in view of Chi and Sano et al. as applied to claim 13 above, and further in view of Restle et al. (IEEE Symposium on VLSI Circuits Digest of Technical Papers, 1998).

The combined references above do not specifically disclose grid-based or an H-tree within a clock distribution network.

Restle et al disclose (see page 2) H-tree and grid-based within a clock distribution network.

Therefore, it would have being obvious to one skilled in the art at the time the invention was made to use grid-based (as in claim 17) or H-tree (as in claim 18) clock distribution network, since that would result in zero or very nominal skew.

As to claim 26, Restle et al disclose in fig. 1 a microprocessor circuitry.

Allowable Subject Matter

7. Claims 27-45 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter: The references of record do not teach or make obvious the device structure as recited in claims 27 and 34.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rao et al. USPN 6,037,822 disclose a distribution of differential clock network (see fig 15).

Art Unit: 2826

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS
July 9, 2003